

What is claimed is:

1. An information processing device for performing broadcasting communications by a  
5 transmitter transmitting data to each of a plurality of receivers using a processor provided on a transmitter side, comprising:

a transmission unit generating a packet for each receiver based on information about a receiver  
10 and transmission data provided by the processor through an input/output bus, and transmitting the packet to a connected network; and

15 a unit connecting said transmission unit to the processor of said information processing device through the input/output bus.

2. The device according to claim 1, further comprising

20 a plurality of said transmission units, wherein  
said processor of said information processing device provides the same transmission data for the plurality of transmission units through the input/output bus, and provides a different piece of  
25 receiver information for each transmission unit.

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3. The device according to claim 1, wherein:  
said transmission unit comprises:  
a transmission schedule unit controlling  
5 a transmission schedule including a transmission  
order and transmission timing of a packet;  
a receiver information management unit  
managing the receiver information;  
a buffer unit storing and managing the  
10 transmission data; and  
a packet unit generating a packet for a  
specified receiver according to the transmission  
schedule, and transmitting the packet.
  - 15 4. The device according to claim 3, wherein  
said transmission unit further comprises a  
transmission data input unit obtaining transmission  
data without receiving the transmission data from  
the processor of said information processing device.  
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  5. The device according to claim 3, further  
comprising:  
a plurality of the transmission units; and  
at least one input transmission unit  
25 comprising a transmission data input unit obtaining

transmission data without receiving the transmission data from the processor of said information processing device, wherein

5 transmission data is provided from said input transmission unit to another transmission unit through the input/output bus.

6. The device according to claim 3, wherein

10 said transmission schedule unit provides identification information for obtaining information about a specified receiver from information managed by said receiver information management unit, identification information for obtaining, from said buffer unit, data to be transmitted to the specified receiver, and information relating to transmission of a packet based on an order and timing predetermined for said packet unit.

20 7. The device according to claim 6, wherein

25 said information relating to transmission of a packet contains information relating to a time at which a packet has previously been transmitted, and a time at which a packet is to be transmitted next time.

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8. The device according to claim 3, wherein:  
said information about a receiver contains  
information required by said packet unit to  
5 generate a packet for each receiver; and  
said receiver information management unit  
transfers to said packet unit the information about  
a receiver corresponding to the receiver specified  
by said packet unit.
- 10 9. The device according to claim 8, wherein:  
said information about a receiver is formed in  
a format of packet header information required when  
the transmission data is to be transmitted to a  
15 network; and  
said information about a receiver contains  
change information for identification of a fixed  
portion and a portion to be changed for each packet.
- 20 10. The device according to claim 9, wherein  
said packet unit processes only a portion to  
be changed in information according to the change  
information, generates packet header information  
using a fixed portion as a portion corresponding to  
25 the information about the receiver, generates a

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packet by combining the transmission data with the packet header information, and transmits the packet to a network.

5       11. The device according to claim 3, wherein  
              said buffer unit manages management  
information for management of the transmission data,  
and auxiliary information for generation of a  
packet by said packet unit in addition to the  
10      transmission data.

15       12. The device according to claim 11, wherein  
              said buffer unit divides the transmission data  
into transmission data blocks having a  
predetermined length, and manages said transmission  
data block with the management information and the  
auxiliary information added to the block.

20       13. The device according to claim 12, wherein:  
              said management information is information  
relating to a length of the transmission data block,  
and information relating to a number of receivers  
who are to receive the transmission data block; and  
              said auxiliary information refers to an error  
25      detection code of the transmission data block.

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14. The device according to claim 13, wherein:
- 5        said information relating to the number of  
receivers to receive the transmission data block is  
represented by a counter showing a number of  
receivers requiring the transmission data block;
- 10      a corresponding counter increases its value by  
1 each time said transmission schedule unit refers  
to the transmission data block as data to be  
transmitted to a receiver;
- 15      a corresponding counter decreases its value  
by 1 each time said packet unit completes  
transmitting the transmission data block; and
- 20      said corresponding transmission data block is  
discarded when said buffer unit decreases said  
counter by 1 into 0.
15. The device according to claim 13, wherein
- 20      said error detection code is a checksum of the  
transmission data block.
16. The device according to claim 15, wherein
- 25      said checksum is obtained as a result of  
computing a sum of complements of 1 in a length  
unit equal to or longer than 16 bits predetermined

for the transmission data block.

17. The device according to claim 3, wherein  
said transmission unit further comprises:

5           a reception unit receiving a packet from  
a network;

10          a received packet identification unit  
identifying whether or not the packet received by  
said reception unit can be processed by said  
transmission unit; and

15          a received packet processing unit  
processing the packet determined as processable by  
said received packet identification unit, and  
transferring the packet determined as unprocessable  
to the processor of said information processing  
device.

18. A network adapter provided in an information  
processing device which performs broadcasting  
20        communications by a transmitter transmitting data  
to each receiver to a plurality of receivers,  
comprising:

25          a transmission schedule unit controlling a  
transmission schedule including a transmission  
order and timing of a packet;

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a receiver information management unit managing information about the receivers;

a buffer unit storing and managing transmission data; and

5 a packet unit generating a packet for a specified receiver according to the transmission schedule, and transmitting the packet.

10 19. The network adapter according to claim 18,  
further comprising

a transmission data input unit obtaining transmission data without receiving transmission data from a processor of said information processing device.

15 20. The network adapter according to claim 18,  
further comprising:

a reception unit receiving a packet from a network;

20 a received packet identification unit identifying whether or not the packet received by said reception unit can be processed by said network adapter; and

25 a received packet processing unit processing the packet determined as processable by said

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received packet identification unit, and  
transferring the packet determined as unprocessable  
to the processor of said information processing  
device.

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21. A method for generating a packet by an  
information processing device on a transmitter side  
for performing broadcasting communications, and  
transmitting the packet, comprising:

10 generating a packet for each receiver by a  
network adapter in said information processing  
device based on information about a receiver from a  
processor of said information processing device and  
transmission data; and

15 transmitting the generated packet by the  
network adapter of said information processing  
device.

22. The method according to claim 21, wherein  
20 said network adapter of said information  
processing device generates and transmits a packet  
for a specified receiver according to a  
transmission schedule including a transmission  
order and timing of the packet.

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23. The method according to claim 22, further comprising:

holding information about the receiver in a format of packet header information in advance; and

5 dividing the transmission data into blocks,  
and holding the blocks with management information  
corresponding each block and auxiliary information  
for generation of a packet added to each block.

10 24. An information processing device for performing broadcasting communications by a transmitter transmitting data to each of a plurality of receivers using a processor provided on a transmitter side, comprising:

15 transmission means for generating a packet for each receiver based on information about a receiver provided by the processor through an input/output bus and transmission data, and transmitting the packet to a connected network; and

means for connecting said transmission means to the processor of said information processing device through the input/output bus.